REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Official Action dated August 1, 2003. In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

Status of the Claims

Claims 1, 6-12 are under consideration in this application. Claims 2-5 are being cancelled without prejudice or disclaimer. Claim 1 is being amended, as set forth above, in order to more particularly define and distinctly claim Applicants' invention. New claims 6-12 are being added to recite other embodiments described in the specification, especially pages 27-28; Figs. 6-8.

Additional Amendments

The claims are being amended to correct formal errors and/or to better disclose or describe the features of the present invention as claimed. Applicants hereby submit that no new matter is being introduced into the application through the submission of this response.

Prior Art Rejections

Claims 2 and 4 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 5,897,414 to Bergeron et al. (hereinafter "Bergeron"), and claims 1, 3, 4 and 5 were rejected under 35 U.S.C. 102(e). Claim 1 was rejected on the grounds of being anticipated by U.S. Pat. App. No. 2002-0054267 Matsumoto et al. (hereinafter "Matsumoto") and U.S. Pat. No. 6,583,846 to Yanagawa et al. (hereinafter "Yanagawa"). Claims 3, 4 and 5 were also rejected on the grounds of being anticipated by Yanagawa. The prior art references of Morimoto et al. (6,181,406), Shibahara (6,459,468), Imbayashi et al. (6,535,264), Asuma et al. (2000-19526), Yanagawa et al. (2000-298282), Nakamura (10-153797), and Yamada et al. (2000-122071) were cited as being pertinent to the present application. These rejections have been carefully considered, but are most respectfully traversed.

The liquid crystal display device according to the invention (page 26, line 26 ~ page 29, line 17; Figs. 6A, 6B, 7, 8, 9A-9D), as now recited in claim 1, comprises: a first substrate

100 B on a main surface thereof, a black mask ***3*** and color filters ***2***, each arranged in an aperture of the black mask ***3***(page 10, line 24 ~ page 11, line 3***)***, being formed; a liquid crystal layer ***9***; a second substrate ***100A*** disposed opposite to the first substrate across the liquid crystal layer ***9*** and stuck to the first substrate ***100 B*** by a sealing material (page 23, lines 6-22) applied to peripheries of a main surface of the first substrate ***100B*** facing the liquid crystal layer ***9*** and of a main surface of the second substrate ***100A*** facing the liquid crystal layer ***9***; a stacked structure (page 4, line 25 ~ page 5, line 22) formed on the main surface of the second substrate ***100A*** by stacking in order first signal lines ***102***, ***104***, an insulating film ***105*** covering the first signal lines ***102***, ***104***, and second signal lines ***103*** each overlappingly intersecting the first signal lines ***102***, ***104*** over the insulating film ***105*** therebetween; and first spacers ***1b*** and second spacers ***1c*** both formed on the main surfaces of the first substrate ***100B*** to be pressed against the black mask ***3*** by an external force. In the absence of the external force, each of the second spacers ***1c*** is spaced from the stacked structure formed on the second substrate ***100A*** to accommodate the liquid crystal layer ***9*** therebetween, and each of the first spacers ***1b*** directly contacts with the stacked structure formed on the second substrate ***100A***.

In other words, the invention applies two kinds of spacers denoted by the reference numerals ***1b*** and ***1c*** coexisting on the black mask ***3*** formed on the first substrate ***100B*** and face the stacked structure formed on the second substrate ***100A***. The spacing-maintaining spacers 1b provided corresponding to " *the intersection of the drain signal line 103 and the counter voltage signal line 104*" in the stacked structure (page 27, line 9-11; FIG. 6A) are ordinarily contacts with the TFT substrate 100A to maintain the gap between the TFT substrate 100A and the color filter substrate 100B. The load-bearing spacers 1c provided only "*over the drain signal line 103*" but not over the counter voltage signal line 104 (i.e., only over one set of signal lines but not any overlappingly intersecting positions of the two sets of signal lines in the stacked structure, page 27, line 14; FIG. 6B) ordinarily do not contact with the TFT substrate 100A, but if an external force perpendicular to both substrates is applied, the spacers 1b are pressed and elastically deformed, so that the gap between the TFT substrate 100A and the color filter substrate 100B becomes narrow and the spacers 1c also come into contact with the TFT substrate 100A to bear the load. Within one liquid crystal panel, by selecting positions where to form such spacers, it is possible to appropriately adjust the number of spacers 1b and spacers 1c, whereby it is possible to realize a liquid crystal display device which can cope with perpendicular or horizontal external forces relative to its liquid crystal panel without any

problem (page 27, line 21 to page 28, line 10). As such, any positional deviation of the second substrate ***100A*** to the first substrate ***100B*** caused by an external force is absorbed by the cooperation between the first spacers ***1b*** and the second spacers ***1c***.

None of the cited prior art references teaches or suggests such "two group of spacers on the first substrate so positioned relative to overlappingly intersecting positions of the first signal line and the second signal lines in the stacked structure on the color filter substrate" as recited in claim 1.

In contrast, Matsumoto merely teaches ONE kind (rather than TWO kinds) of columnar spacers 26 (Fig. 3) positioned correspondingly to a gate electrode 10.

Yanagawa (Figs. 25-27) shows four kinds of spacers formed on the substrate 1B. Embodiment 16 (Fig. 25, cols. 16-17)has two kinds of spacers 10A, 10B: "*The first type of spacers 10B* (i.e., spacing-maintaining spacers) *are disposed in a region 25B in FIG. 25 for maintaining the spacing between the two substrates 1A, 1B and the second type of spacers 10A disposed so as to be superposed on both the ends of each of the gate lines in a region 25A*(to form a redundant by-pass if the gate line 2 breaks, i.e., redundant-connection spacers)." Embodiment 17 (Fig. 26, col. 17)has two kinds of spacers 10A, 10B: "the *first type of spacers 10B* (i.e., spacing-maintaining spacers) *...and a third type of spacers 10A* (i.e., sealing spacers) *disposed in the vicinity of the sealing member 20 for sealing the two substrates 1A, 1B in a region 26A in FIG. 26.*"

However, all these three kinds of spacers (arguably similar to the spacing-maintaining spacers ***1b*** of the invention) directly contacts with a structure (including a orientation film 7 and a gate line 2) on the substrate 1A, rather than correspond to the overlappingly intersecting positions of the counter voltage signal line ***104*** and the second signal lines ***103*** in the stacked structure (including first signal lines, an insulating film covering the first signal lines, and second signal lines each overlappingly intersecting the first signal lines over the insulating film therebetween) on the second substrate. Although Yanagawa teaches a stacked structure having an insulating film INS sandwiched between the gate lines 2 and the drain lines 3 (Fig. 6B) or between the gate lines 2 and the counter-voltage signal lines 4 (col. 5, lines 52-63), Yanagawa fails to teach or suggest any spacers directly contacting the TFT substrate at overlappingly intersecting positions of the first signal line and the second signal lines in the stacked structure on the color filter substrate.

Regarding the fourth kind of spacers in the Embodiment 19 (Fig. 27; col. 18) of Yanagawa, although the spacer 10 (arguably similar to the load-bearing spacers ***1c*** of the invention) is spaced apart from the TFT substrate with a liquid crystal accommodated therebetween, the spacer 10 is not

positioned corresponding to any signal lines, rather than only to *the drain signal line 103* but not to the counter voltage signal line 104 as the load-bearing spacers ***1c*** of the invention.

Iwamoto (Japanese Patent Application Laid Open No. 2000-267117 cited by the China Patent Office (SIPO) and submitted via IDS concurrently with the response, see its English Abstract) shows first spacers 48 formed on a first substrate 41 facing the stacked structure formed on a second substrate 11 and a second spacer 80 interposed between the substrates 41, 11. However, the second spacer 80 is located in a sealing part 70, while none of the spacers 1b, 1c of the present invention is provided inside the sealing material. Moreover, Iwamoto teaches that the second spacer 80 is made of a material having lower compression strength than that of the first spacers 48. Based upon such a property of the second spacer 80, the first spacers 48 contact with the stacked structure formed on the second substrate 11 only after of the second spacer 80 is destroyed by an external pressure applied to the liquid crystal panel. This fact clearly prevents the two kinds of spacers coordinate/cooperate in the manner according to the present invention. It is well established that a rejection based on cited references having contradictory principles or principles that teach away from the invention is improper.

The other references fail to compensate for all the above-mentioned deficiencies.

Although the invention applies general spacers and a general stacked structure, the invention arrange the positions of the spacers corresponding to two different kinds of positions in the stacked structure to achieve unexpected results or properties. The presence of these unexpected properties (e.g., two kinds of spacers coordinate/cooperate in the manner discussed above) is evidence of nonobviousness. The unexpected properties were unknown and non-inherent functions in view of Yanagawa, since Yanagawa does not inherently achieve the same results. In other words, these advantages would not flow naturally from following the teachings of Yanagawa, since Yanagawa fails to suggest "any spacers directly contacting the TFT substrate at overlappingly intersecting positions of the first signal line and the second signal lines in the stacked structure on the color filter substrate (spacing-maintaining spacers)" or "any spacers being spaced apart from the TFT substrate with a liquid crystal accommodated therebetween and positioned only one kind of signal line but not to another kind of signal line in the stacked structure (load-bearing spacers)."

> "Presence of a property not possessed by the prior art is evidence of nonobviousness. In re Papesch, 315 F.2d 381, 137 USPQ 43 (CCPA 1963) (rejection of claims to compound structurally similar to the prior art compound was reversed because claimed compound

unexpectedly possessed anti-inflammatory properties not possessed by the prior art compound); Ex parte Thumm, 132 USPQ 66 (Bd. App. 1961) (Appellant showed that the claimed range of ethylene diamine was effective for the purpose of producing " 'regenerated cellulose consisting substantially entirely of skin' " whereas the prior art warned "this compound has 'practically no effect.' "). MPEP§716.02(a).

Applicants further contend that the mere fact that one of skill in the art might arrange the foud kinds of spacers of Yanagawa corresponding to different positions of the stacked structure to meet the terms of the claims is not by itself sufficient to support a finding of obviousness. The prior art must provide a motivation or reason for one skilled in the art to provide the unexpected properties, such as two kinds of spacers coordinating/cooperating in the manner discussed above, without the benefit of appellant's specification, to make the necessary changes in the reference device. Ex parte Chicago Rawhide Mfg. Co., 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984). MPEP§2144.04 VI C.

Applicants contend that neither Matsumoto, Yanagawa, nor their combination teaches or discloses each and every feature of the present invention as disclosed in independent claim. As such, the present invention as now claimed is distinguishable and thereby allowable over the rejections raised in the Office Action. The withdrawal of the outstanding prior art rejections is in order, and is respectfully solicited.

In view of all the above, clear and distinct differences as discussed exist between the present invention as now claimed and the prior art reference upon which the rejections in the Office Action rely, Applicants respectfully contend that the prior art references cannot anticipate the present invention or render the present invention obvious. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the

above-captioned application, the Examiner is invited to contact the Applicants' undersigned representative at the address and phone number indicated below.

Respectfully submitted,

Stanley P. Fisher
Registration Number 24,344

Juan Carlos A. Marquez
Registration Number 34,072

REED SMITH LLP
3110 Fairview Park Drive
Suite 1400
Falls Church, Virginia 22042
(703) 641-4200

October 31, 2003
SPF/JCM/JT